



Caltrans Division of Research,
Innovation and System Information

Research Results

Maintenance

DECEMBER 2013

Project Title:

Evaluation of COZEED and MAZEED
Officers Use in Caltrans Construction
and Maintenance Work Zones

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Using CHP to Manage Traffic in Highway Work Zones

*The presence of CHP officers in work zones reduces speeding
and increases safety*

WHAT WAS THE NEED?

Approximately 2.5% of all collisions on California highways occur around Caltrans work zones. Between 2007-2011, 243 people were killed and 10,657 more injured as a result of these collisions, with direct medical costs reaching \$800 million per year.

To control traffic and maintain speeds at the posted limits, Caltrans contracts with the California Highway Patrol (CHP) to support the Construction Zone Enhanced Enforcement Program (COZEED) and Maintenance Zone Enhanced Enforcement Program (MAZEED). The goal of these programs is to create a safer environment for workers and reduce traffic collisions in work zones. Research indicates that motorists reduce traffic speed when CHP officers are present, but it is not clear what are the optimum deployment methods and operational procedures to enforce compliance and achieve the best safety outcome.

WHAT WAS OUR GOAL?

The goal was to determine the most effective way to deploy CHP officers in work zones to reduce traveling speeds and develop methods to evaluate collision data to assess whether speed reduction improves the safety of highway work zones.



*Pre-test safety briefing
with Caltrans and CHP*



DRISI provides solutions and
knowledge that improve
California's transportation system.

WHAT DID WE DO?

Caltrans, in partnership with the University of California, Davis Advanced Highway Maintenance and Construction Technology Research Center and CHP, conducted field tests using different work zone configurations and varying numbers of CHP units in both rural and urban settings, during construction at nighttime and maintenance during daylight hours. Commercially available iCone™ hardware was used to monitor speeds.

The researchers compared baseline data—no CHP units present—to data from the following CHP configurations:

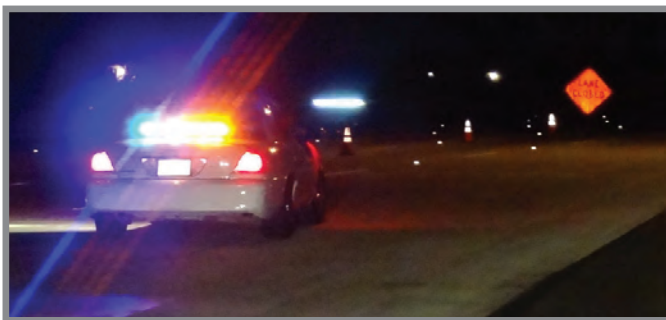
- One CHP unit stationed before the workers
- One CHP unit stationed before the workers and one near the end of the work zone
- One CHP unit stationed before the workers, one beyond the workers, and one near the end of the work zone

Computer simulations were used to further evaluate the presence of CHP officers on collision outcomes.

WHAT WAS THE OUTCOME?

The presence of CHP in the work zone slows traffic on the average of 5-7mph. However, if a CHP unit is located only before the workers, drivers often speed up after passing the workers. When multiple CHP units are used, drivers generally maintain the slower speed until passing the last unit. The effectiveness of using CHP is highly dependent on the geometry of the work zone: If drivers can see all CHP units in the work zone, they maintain the slower speed throughout the work zone.

Simulations show that if speeds are reduced 5-7 mph at a work zone, injury severity could be reduced 28%-40%, and 23%-28% of all collisions could be prevented.



COZEEP night testing near San Diego

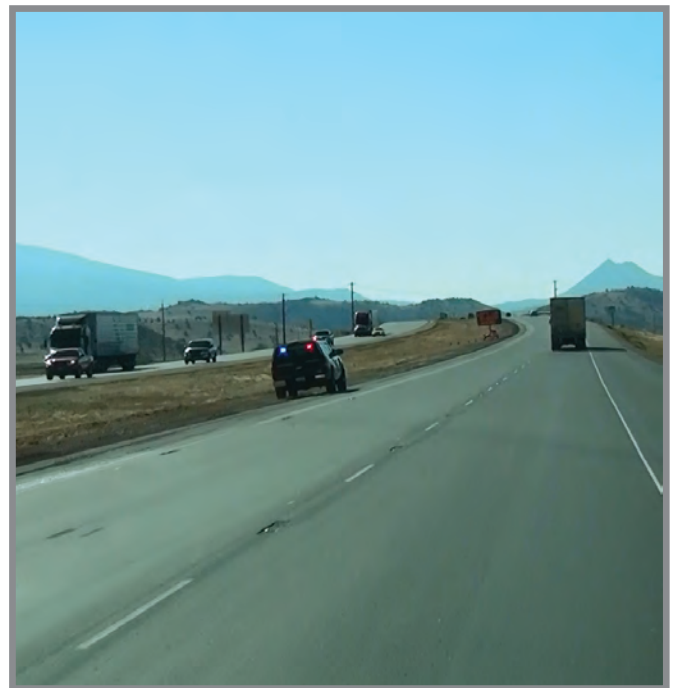
WHAT IS THE BENEFIT?

Reducing speeds lowers the frequency or severity of crashes in work zones, thereby making work zones a safer place to work. The presence of CHP officers motivates drivers to slow down, especially when they are stationed throughout the work zone. COZEEP and MAZEEP are effective programs in improving safety for both workers and motorists.

LEARN MORE

The final report will be available early 2014 at:

www.dot.ca.gov/research/researchreports/dri_reports.htm



MAZEEP testing near Mt. Shasta